

REMARKS

Entry of this Amendment is requested, along with reconsideration and allowance of the revised application.

Interview Summary

The applicants appreciate the Examiners participation in the personal interview on October 6, 2005. The present Amendment is believed to be in compliance with MPEP 713.04 for making the substance of the interview of record. Should the Examiner believe otherwise, she is invited to contact the undersigned.

All rejected claims were discussed at the interview, and the amendments provided herein were also discussed. The Examiner was heard to agree at least that the cited art does not teach the claims as revised, and that the salient issues were amenable to solution.

Present Amendment

Sole independent claim 95, as amended, now recites: "wherein photo-crosslinking results from reacting benzophenone groups on the first polymer." Support for this recitation is found in the specification, for example, at page 26, first full paragraph.

Claim 95 also recites: "...second polymer which is different than the first polymer." There is support for this amendment throughout the specification, as well as it the inherent meaning of a "first" and a "second" polymer. That is, were the two polymers the same then no blend would be prepared, and yet the applicants clearly describe a blend. Thus, at page 18, in the second full paragraph, the specification states that "polymer blends can be prepared by mixing two or more polymers together including binary and ternary blends." The first polymer is described in one section of the specification, *e.g.*, at page 22, as differing from the second polymer, which is described separately and differently beginning at page 26 (the "invention also provides a second polymer for blending with the first polymer...").

Claim 95 further recites: "...wherein the first polymer is photocrosslinked with itself and further photocrosslinked with the second polymer." Support for this can be found, for example, at page 26 of the specification, lines 3-8 ("Benzophenone ... group can also react with its own polymer chain or with other polymer chains...") and at page 27, lines 1-5 ("...the second polymer ... can react with the photocrosslinkable functionality of the first polymer.").

In addition, claim 95 also prescribes: "...the first and second polymers comprise a polysaccharide." Support for this limitation can be found, for example, at page 21 ("...the

polysaccharide is preferably a blend of two polysaccharides, including a first polysaccharide and a second polysaccharide...” and at page 24, first full paragraph (“...the polymeric hydrogel precursor, including first and second polymer, is a polysaccharide...”).

During the interview, the Examiners suggested clarifying the phrase “wherein the device is a mass spectrometer.” The applicants presently clarify it to be a probe of a mass spectrometer. Specification support can be found at, for example, pages 3, 4, and 43.

Finally, claim 99 is amended to correct the dependency, and claim 123 is amended to correct spelling.

Figures

During the interview, the Examiner suggested the submission of figures with text removed. On November 8, 2004, however, the applicants filed replacement drawings, in response to a Notice to File Missing Parts, mailed September 7, 2004. Accordingly, this issue is believed moot.

IDS

The Examiner raised an issue about the November 24, 2004 IDS. In response, the applicants are refiling an IDS based on references A13-A21 from that IDS including copies of the references.

Response to Rejections under 35 USC § 112

The Examiner raised three indefiniteness rejections against claims 95, 97, and 123. The initial two rejections are addressed in the amendment to claim 95 and the cancellation of claim 97. The third rejection, for claim 123, is believed to only involve a spelling issue as discussed at the interview. The spelling has been corrected.

Response to Rejection under 35 USC § 102

First, the Examiner has rejected claims 94-125 as anticipated by Boschetti et al. (US 2003/0218130). The applicants respectfully traverse, particularly in view of the present amendments. This rejection was reviewed at the interview.

Boschetti does not anticipate for a variety of reasons. Most importantly, Boschetti et al. does not show a composition comprising a first polymer comprising a polysaccharide and a second, different polymer also comprising a polysaccharide. For example, Boschetti et al., Figure 3, shows a first dextran and a functionalized monomer comprising a binding functionality. Boschetti does not teach a second polymer, and to the extent that one assumes for sake of argument that a polymerization is shown in Figures 3 and 4, the result of this polymerization is not a second

polysaccharide polymer. The functionalized monomer shown in Figure 3 is described in the specification at paragraph 81, but is not described or suggested to be a saccharide monomer. Moreover, the binding functionality cannot be construed to be a polysaccharide. Hence, no anticipation can be present.

Also, Boschetti does not teach or suggest that “photo-crosslinking results from reacting benzophenone groups on the first polymer.” In Boschetti, the polymer is functionalized with a “second polymerizable moiety” (paragraph 6). Second polymerizable monomers are described at paragraph 75 but do not include or suggest benzophenone. During the interview, the applicants and the Examiner also discussed that Boschetti teaches a benzophenone photoinitiator (paragraph 120, “2,2’-dihydroxy-4-methoxybenzophenone”). Yet Boschetti et al. does not describe this photoinitiator as attached to the dextran polymer. The context indicates that the benzophenone derivative is added to the polymerization mixture, to generate free radicals that start the polymerization of the vinyl groups on the dextran.

The Examiner has not raised an obviousness rejection for claims 95-124 based on Boschetti. The applicants also believe, however, that these differences substantiate the non-obviousness of the claimed subject matter over Boschetti, read alone or in combination. The applicants and the Examiner discussed at the interview that Boschetti describes an in situ polymerization approach (paragraphs 121 and 122), whereas the applicants claim a different blend approach, which generally provides advantages noted below.

In sum, the presently claimed compositions possess structural differences over the prior art compositions.

Response to Rejections under 35 USC § 103

Claim 125 was rejected over Boschetti in view of Hillenkamp (5,118,937). The Examiner finds motivation in that one would look at the advantages of Hillenkamp and use Hillenkamp’s teachings “in order to prevent desorption of analyte.” The applicants respectfully traverse, particularly in view of the present amendments.

As discussed above, the Boschetti reference failed to teach several elements of the invention as claimed, including, for example, a composition comprising two different polysaccharides and photocrosslinking by attached benzophenone groups. Hillenkamp described a method of mass spectrometry but failed to disclose the elements missing from Boschetti et al.

This rejection is based on hindsight. No motivation is present to combine the references, and even if the references are combined for sake of argument, the claimed invention is not arrived at, as several elements missing from Boschetti et al. were not provided by Hillenkamp.

The Examiner also rejects claims 95, 96, 99, and 100 as obvious over Nelson in view of Johnson. The Examiner stated that Nelson showed a mass spectrometry probe comprising a hydrogel polymer blend on the surface and that Johnson showed a photocrosslinked polymer. The applicants respectfully traverse, particularly in view of the present amendments.

First, Applicants respectfully submit that Nelson did not show a hydrogel polymer blend. Rather, Nelson showed a polymer that was derivatized with a binding functionality, e.g., an antibody. There is no disclosure of a second polysaccharide comprising a binding functionality, as the claims require.

While Johnson may have shown a photoreactive polymer, this element does not suffice to render the claimed invention obvious because neither reference shows a polymer blend. The references fall short even in combination. Hence, motivation to combine references becomes moot.

Finally, Applicant takes this opportunity to point out certain unobvious and useful features of this invention. The invention is produced by blending two different polymers – a polysaccharide comprising a benzophenone photoreactive group and a polysaccharide comprising a binding functionality. By beginning with two polymers already formed, this combination provides flexibility in the choice of binding functionality and control over the final product formed. Applicants submit that a mass spectrometry probe having on its surface a blend of two different polysaccharides photocross-linked together, one of which had benzophenone moieties and the other of which has binding functionalities, is both novel and unobvious. Therefore, Applicants respectfully request the Examiner to withdraw all the pending rejections and allow this application to issue.

CONCLUSION

The presently claimed compositions are structurally distinct over the prior art references and the distinctions are sufficiently important, representing a different approach to solve problems and provide advantages for probes for mass spectrometers, that obviousness is not an issue.

Again, the applicants appreciate the Examiners' taking the time during the personal interview to resolve these issues. The Examiner is invited to contact the undersigned by telephone if it is felt that a telephone interview would advance the prosecution of the present application.

The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. §§ 1.16-1.17, or any other provision, or credit any overpayment, to Deposit Account No. 19-0741. Should no proper payment be enclosed herewith, as by a check being in the wrong amount, unsigned, post-dated, otherwise improper or informal or even entirely missing, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 19-0741. If any extensions of time are needed for timely acceptance of papers submitted herewith, Applicant hereby petitions for such extension under 37 C.F.R. § 1.136 and authorizes payment of any such extensions fees to Deposit Account No. 19-0741.

Respectfully submitted,

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